United Nations E/2017/72

Economic and Social Council

Distr.: General
5 June 2017

Original: English

2017 session
28 July 2016-27 July 2017
Agenda item 5
High-level segment

Discussions held during the twentieth session of the Commission on Science and Technology for Development on the theme of the 2017 session of the Economic and Social Council, "Eradicating poverty in all its forms and dimensions through promoting sustainable development, expanding opportunities and addressing related challenges"

Note by the Secretary-General

The Economic and Social Council has selected "Eradicating poverty in all its forms and dimensions through promoting sustainable development, expanding opportunities and addressing related challenges" as the theme of its 2017 session.

The present note serves as a contribution from the Commission on Science and Technology for Development on that theme. It provides a summary by the Chair of the discussions held during the twentieth session of the Commission, held in Geneva from 8 to 12 May 2017.

17-09042 (E) 080617

Please recycle

Summary by the Chair of the discussions held during the twentieth session of the Commission on Science and Technology for Development on the theme of the 2017 session of the Economic and Social Council, "Eradicating poverty in all its forms and dimensions through promoting sustainable development, expanding opportunities and addressing related challenges"

1. The Commission on Science and Technology for Development held its twentieth session in Geneva from 8 to 12 May 2017. During the session, the Commission considered two priority themes: (a) "New innovation approaches to support the implementation of the Sustainable Development Goals"; and (b) "The role of science, technology and innovation in ensuring food security by 2030". On 8 May, a high-level round table was convened on the theme "Eradicating poverty in all its forms and dimensions through promoting sustainable development, expanding opportunities and addressing related challenges". Panel discussions on the priority themes were held on 9 and 10 May. The Commission decided to submit the summary of the deliberations held during its twentieth session to the Economic and Social Council as a substantive contribution for consideration during the Council's high-level segment, to be held in July.

2. During the session, participants reaffirmed that science, technology and innovation were key drivers of the profound changes that the world needed to rapidly bring about in order to achieve inclusive and sustainable development by 2030. Notwithstanding the significant progress that had already been achieved in terms of poverty reduction and food security, many development gaps still remained, including significant technology and digital divides. Both the 2030 Agenda for Sustainable Development and the Addis Ababa Action Agenda of the Third International Conference on Financing for Development highlighted the critical and catalytic role that science, technology and innovation played in attaining sustainable development. The Sustainable Development Goals are an ambitious, multidimensional and interlinked set of goals. They cannot be achieved without the effective, appropriate and inclusive application of science, technology and innovation.

3. However, science, technology and innovation and trade were potentially disruptive forces whose benefits could leave the poor and the marginalized behind. Those groups could be excluded from many of the direct benefits absent the implementation of policies and the existence of an enabling environment that helped to ensure that science, technology and innovation and trade were inclusive engines of globalization. The social, environmental and economic dimensions of development were increasingly intertwined. Various new and emerging technologies and converging applications of science, technology and innovation posed major challenges and offered huge opportunities. Putting technology at the service of prosperity and well-being for all was an essential task in order to ensure a level of inclusiveness that would leave no one behind.

Science, technology and innovation and poverty reduction/food security

4. Food and nutrition insecurity were both a key driver and a consequence of poverty. Addressing those challenges was, therefore, critical for poverty eradication. Doing so was fundamental for developing countries, in particular those in Africa, the least developed countries and countries in special situations. Given that nearly 795 million people were still undernourished, with the majority of those living in

developing countries and rural areas, innovations in agriculture represented a necessary pathway for sustainable and inclusive poverty reduction. Achieving Sustainable Development Goal 2 (to end hunger, achieve food security and improved nutrition and promote sustainable agriculture) implied the need to surmount several challenges, including climate change, lack of access to land and water, soil degradation and desertification, changes in dietary patterns, population growth in some parts of the world and low or slowed growth in agricultural productivity. Addressing food security was also instrumental to achieving many other Goals, reflecting the links among the Goals. The focus on the food security debate needed to be reframed to also include the nutrition dimension.

5. Food security was a concern not only for developing countries only, but for all countries. Nevertheless, the impact of science, technology and innovation on agriculture could have relatively large implications for many developing countries. There was broad consensus among participants that science, technology and innovation would play a key role in addressing food security by 2030, including through scientific, technical and innovative approaches. They would be useful in achieving many food security-related goals, including: (a) improving agricultural productivity and the quality of food production; (b) making food more accessible and nutritious; (c) promoting sustainable and climate-compatible agricultural practices to limit negative environmental impacts; (d) ensuring access to affordable and sustainable energy; (e) developing infrastructure for better water management and improved irrigation methods; (f) increasing mechanization as appropriate; (g) providing access to modern equipment and improved inputs such as seeds and fertilizers; (h) creating high-value job prospects for rural workers; and (i) adding greater value to agricultural production. Connecting farmers to information and to each other was also crucial.

6. Fulfilling the goal of zero hunger would require the application of new technologies and the intensification of existing applications of science, technology and innovation across the food system to address all dimensions of food security. Participants argued that food should be produced in ways that are less resource-intensive, preserve biodiversity and the ecosystem and ensure resilience to climate change and extreme weather, while also satisfying the growing needs of a rapidly rising global population. Some participants highlighted the problem of seed production being concentrated in the hands of a few large multinational companies, which focus on just a few crops and seeds. That practice led to uniformity, the displacement of farmer seed varieties and genetic erosion that, together, had a negative impact on biodiversity and the environment. The conservation and use of farmers' seeds were important to the preservation of biodiversity, heterogeneity, adaptability and affordability. That could be achieved through the protection of traditional knowledge, support from community and public gene banks, a reform of seed and intellectual property laws and the recognition of the rights of peasants and people living in rural areas.

7. Participants considered a wide array of new and emerging technologies that could help to achieve food security and improve nutrition, including: (a) the use of drones for soil and field analysis, sowing, crop spraying, animal health monitoring and targeted irrigation; (b) the application of synthetic biology to cure genetic diseases in animals or develop new traits in plants; (c) the harnessing of artificial intelligence and machine learning to enable precision agriculture; (d) the application of early warning systems to serve as climate-smart technologies in disaster risk reduction; and (e) the implementation of mobile technology-enabled schemes to provide financial services and information to small farmers. The use of new technologies in many developing countries faced challenges, however, including a lack of infrastructure to achieve economies of scale in production, their high degree

of complexity, relatively high costs and intellectual property rights issues. Therefore, a proper balance had to be struck between the use of new science and technology, frugal technologies and traditional knowledge by small farmers.

8. Achieving food security would require the empowerment of rural communities and small farmers and the provision of technical and financial assistance, capacity-building assistance and the exchange of knowledge and experience. A broad food systems approach was needed as part of an agricultural innovation system that not only looked at production but also considered the issues of post-harvest processing and value addition, storage and transport. Building innovative food systems required the creation or strengthening of a multisectoral ecosystem of actors and institutions for pro-poor agricultural innovation. Such a system included farmers, agricultural research and education systems, agricultural extension systems, agricultural innovation policies and investments, and agricultural value chain actors and organizations, as well as the linkages among them. Innovation systems could facilitate knowledge exchange, including local and traditional knowledge as well as modern scientific knowledge, and promote access to technologies for small farmers in developing countries. They could also help improve the farmer-scientist interface.

New innovation approaches to the Sustainable Development Goals and poverty reduction/food security

9. Participants agreed on the need to find ways to encourage more innovation and, beyond that, to ensure that the right kinds of innovation were fostered. Achieving the Sustainable Development Goals by 2030 would require new approaches to development and innovation to ensure that innovation responded to the needs of all people, including the poor and the marginalized. The new approaches would include: (a) mission-oriented innovation, with a view to providing solutions to specific high-priority problems; (b) pro-poor and inclusive innovation to involve poor people in mainstream technology development and innovation processes; (c) grass-roots innovation originating with grass-roots actors in local communities; (d) social innovation, or the development of social relationships, practices and structures aimed primarily at addressing social needs and improving human well-being; and (e) digitally enabled open and collaborative innovation, which would allow knowledge and technology to be produced across multiple actors and institutions, drawing on both formal and informal knowledge. These approaches had the potential to better address the needs, interests and perspectives of poorer, marginalized communities and better target efforts to achieve social and environmental goals. Several countries, including China, the Dominican Republic, India and Mexico, shared their experiences with innovative initiatives. Participants noted that the most transformative impacts were likely to emerge from hybrids of new and more conventional approaches. In addition, they exchanged experiences with the types of policy instruments that could be used to incentivize inclusive innovation. For instance, participants heard an example of how public procurement was being used to create demand for women-run small and medium-sized enterprises.

10. Several participants stressed the need for technologies to be appropriate to the economic and social conditions of developing countries and to take into consideration energy efficiency, labour intensity and production scale as well as social inclusivity and environmental sustainability. The technologies should also match the use and the context in which they are utilized by those who create them and those elsewhere who adopt them. New technologies needed to be suitable to different contexts and adapted to fit them.

11. The challenge was not only to develop new technologies, but also to make existing technologies accessible by diffusing them to all people for whom they were

appropriate, taking into consideration the specific needs of those who are the most marginalized and food insecure. That applied to both modern scientific technologies and to those based on traditional knowledge.

12. Participants noted that, in order for information and communications technologies to play an important role in helping new innovation approaches support the implementation of the Sustainable Development Goals, it was necessary to promote a culture of innovation, design a secure information technology environment and bridge digital divides. Some participants noted that using information and communications technologies to foster new innovation in order to achieve the Goals is both a political choice and a task for all interested stakeholders. One participant stated that our ability to create an Internet for all would depend on the extent to which the development of information and communications technologies would abide by and promote the principles of rights, openness, accessibility and multi-stakeholder participation. Many others reinforced the need to adhere to those fundamental principles in their statements. Some commented that those principles were key to promoting new innovation approaches to assist in achieving the Goals. Panellists highlighted information and communications technology initiatives and programmes that are catalysing new innovation approaches to support the implementation of the Goals, specifically Goals 4, 9 and 16.

13. Finally, although participants agreed that information and communications technologies had the potential to promote new innovations that support the realization of the Sustainable Development Goals, many of them expressed concern about the disruptive potential of those technologies. Panellists suggested that cooperation among all States was necessary to confront the new challenges and threats posed by information and communications technologies.

Gender-sensitive approaches to science, technology and innovation and poverty reduction/food security

14. Participants noted the existence of gender gaps, in particular with respect to digital access and science, technology, engineering and mathematics education. Gender mainstreaming was key in order to reflect the concerns and experiences of both women and men in the design, implementation, monitoring and evaluation of policies and programmes. The 2030 Agenda positions gender equality and women's empowerment at the centre of inclusive and sustainable development.

15. Science and technology had an important role to play in the realization of gender equality. It was critical to enhance the role of women in science, the economy, humanitarian affairs, outreach, health and the whole sustainable development process. Integrating a gender perspective into science, technology and innovation policies required the promotion of equal economic rights for women in science, improvements in access to science and technology education of equal quality across different regions of the world, and better representation of women in policymaking. The use of technology to promote and enable the empowerment of women should also be enhanced. Women's participation as users, content creators, employees, entrepreneurs and leaders in science, technology, engineering and mathematics and information and communications technology should be strengthened. Structural barriers, gender stereotypes and negative social norms that kept women away from science, technology and innovation needed to be eliminated. At the same time, there was a need to strengthen science, technology and innovation education policies so that they were relevant to the needs of, and benefited, women and girls.

16. Women played a prominent role in food production and processing. However, they typically had limited access to resources to increase their output, such as technology, training and education, information, credit and land. They were also often excluded from decision-making processes in managing water and other natural resources, and faced difficulties more broadly in gaining access to support services, including extension services. In order to tackle those problems, policies needed to promote the gender-inclusive use of agricultural science and technology and to support more women in becoming involved in agricultural science and extension services. Agricultural technologies and innovation should be accessible and available to rural women and women farmers, who are often among the poor. It was important to mainstream gender and to promote policies targeting women to improve their access to education, capacity-building and information and their participation in networks. Closing the gender gap would require that women be considered as farmers and innovators. The needs and roles of women had to be considered specifically in the design of gender-sensitive agricultural innovation systems. Strong institutional mechanisms were needed to ensure that national policies, including science, technology and innovation, contributed to the achievement of gender equality. With respect to evidence-based policymaking, it was also necessary to improve the collection, analysis and dissemination of statistics disaggregated by gender.

Public policies and the role of the State in poverty reduction/food security

17. Participants stressed the need for policies that could best harness the benefits of multilateral collaboration, openness and the transformational potential of technology. Failure to do so would risk leaving most developing countries behind. In many developing countries, science, technology and innovation were crucial for poverty reduction through their contribution to the enablement of structural transformation and the addition of greater value in productive activities. Science, technology and innovation policies should be well integrated into national development strategies and aligned with the economic, social and environmental dimensions of development. The science, technology and innovation framework should also be broadened, both in terms of the actors involved and the means of interaction and collaboration, in order to take into account the direction of innovation and the emergence of new innovation approaches. Participants underlined the need for coherence between science, technology and innovation frameworks and other key development policies, including industrial policy and policies on foreign direct investment, trade, education and training, entrepreneurship/small and medium-sized enterprises and competition.

18. Given the increasing convergence and disruptive nature of new, emerging and existing technologies, there was a need for strategies, policies and programmes to ensure the effective use of new technologies as tools for the global development agenda and to maximize the benefits and minimize the various risks that new technologies and innovations might introduce, including with respect to the environment. Policy action was needed to define a research agenda with a focus on smallholder farmers, raising investment in human capacity and knowledge building, improving the quality of education and infrastructure, reducing food waste, ensuring better distribution systems and access to markets at the national, regional and global levels, and putting in place appropriate governance structures. Assessments and foresight exercises relating to existing, new and emerging technologies and their implications for digital development and food security were considered to be useful tools.

19. A wide range of innovations had been developed by or adopted in developing countries. Often, however, it had been done in a piecemeal manner or had not been

applied on a large scale because of gaps in financing, knowledge and partnerships. A broader enabling environment for science, technology and innovation nurtured by national Governments was fundamental to ensuring that scientific and technological advances were aligned with the objectives of poverty eradication and sustainable development.

20. Better communication and information-sharing on the results of research and development were important to overcoming possible resistance to technological applications and to gain public trust. An important challenge to address was the lack of sufficiently disaggregated data and evidence to inform policymaking. Open educational resources, open data, open standards, open software and open access to research publications would reduce the digital divide and contribute to the attainment of the goal of leaving no one behind with respect to access to important data.

21. Science, technology and innovation policies were strongly dependent on national and local contexts. Many countries (and country groups), including Brazil, China, Cuba, India, the Islamic Republic of Iran, Mauritius, Mexico, Peru, the Philippines, Rwanda, Sri Lanka, Thailand, Turkey, Uganda, the United States of America and the European Union, shared their experiences relating to food security and poverty reduction strategies. The discussion addressed the challenges faced and plans for making progress in the implementation of science, technology and innovation-related policies as part of national strategies for promoting inclusive and sustainable development.

Investment, resource mobilization and poverty

22. Harnessing the potential of technology for food security and promoting changes in the direction of innovation towards inclusive and sustainable development would require a sharp focus on long-term investments in infrastructure, networks, human capital and skills development, providing finance for research and innovation, developing market and non-market linkages and improving regulatory instruments. It would also require fostering increased knowledge flows and technology acquisition and technological learning. There was also a need for complementary investments in rural and agricultural extension services to help to diffuse promising sustainable agricultural knowledge and technologies within countries. Moreover, innovative new financing models should be explored. The sources of financing for innovation should be broadened, including by mobilizing private sector funding for innovations that help to achieve the Sustainable Development Goals, and create incentives for desirable types of innovation. Financial resources should be mobilized from a range of sources, both private and public and domestic and foreign.

23. Given the scarcity of technology, finance and human resources in many developing countries, participants encouraged the Commission on Science and Technology for Development to create a Sustainable Development Goal resources access hub, which would serve as a repository for projects, data, financing mechanisms, technological advances and experts, and provide information on relevant success stories, difficulties and obstacles.

The importance of multi-stakeholder partnerships and international cooperation

24. Participants emphasized that steps towards the achievement of the Sustainable Development Goals, including those relating to food security, should not be taken by countries in isolation. Given the existence of common interests and the potential for mutual benefit, it was important to develop common frameworks for cooperation. Strong collaboration and partnerships among stakeholders at all levels,

including local, national, regional and international, would be crucially important, as would close collaboration between the public and private sectors. A more participatory process would allow for the building of stronger links between science and policy.

25. Some examples considered in relation to food security were the multi-stakeholder partnership of the Consortium of International Agricultural Research Centres, the Global Forum on Agricultural Research and the collaboration between the Food and Agriculture Organization of the United Nations, Google and the National Aeronautics and Space Administration of the United States to provide agro-meteorological data, such as information on soil moisture, the location of locusts or the early stages of a forest fire, to small farmers. Moreover, a truly participatory process for technology development needed to include grass-roots and community-based organizations, small and medium-sized enterprises, civil society and the informal sector. The harnessing of science, technology and innovation for food security required collaboration involving key stakeholders from local farming communities, the private sector, government, civil society, academia and the scientific and technical community.

26. It was also pointed out that intergenerational dialogue should be encouraged with the aim of supporting youth empowerment. In line with the multidimensional character of the Sustainable Development Goals, collaboration in science, technology and innovation should be multidisciplinary and multisectoral. There should be efforts to create an enabling environment that is more supportive of a pro-poor focus and to strengthen the ability of the innovation ecosystem to support entrepreneurs and innovators engaged in socially beneficial activities through a more bottom-up approach. Some participants argued that top-down leadership was also important in fostering progress towards the Goals. It would be ideal for the two approaches to work in unison.

27. Participants called for deeper international cooperation to achieve zero hunger by 2030, the extension of the benefits of science and technology and the building of capacity at the national and global levels to make progress towards the Sustainable Development Goals. Many developing countries needed the support of the international community in harnessing new and emerging technologies, including though greater collaboration in technology transfer, the design of effective policy frameworks and the adoption of best or good practices to build technological and innovation capacity. The importance of bilateral, regional and international cooperation in science, technology and innovation was not limited to cooperation between the North and the South, but also included cooperation among countries in the South (South-South collaboration) and triangular cooperation. International cooperation included important regional/sub-regional South-South aspects. A few participants expressed their desire for further regional integration and multilateral cooperation in science, technology and innovation to drive the economic growth that is ultimately beneficial to the poor in particular and to society at large. They also stressed the need to generate institutional capacity to create regional ecosystems that engendered productive, inclusive, open and sustainable innovation processes in the public interest. Several participants emphasized the added value of South-South cooperation in science, technology and innovation and encouraged such collaboration to continue.

28. Participants highlighted the paramount importance of regional and international cooperation in achieving food security. In that regard, they called for more "knowledge aid", which centred on support for science, technology and innovation as part of official development assistance. They encouraged donors to make contributions in support of agricultural research, especially in least developed countries. Other types of cooperation that were identified included collaborative

research and data-sharing, as well as technology assessments and foresight exercises.

29. Regional cooperation could achieve economies of scale to address research priorities for a specific region, as demonstrated by the work of the Forum for Agricultural Research in Africa, the Latin American Fund for Irrigated Rice, the Regional Fund for Agricultural Technology (a research consortium focused on Latin America and the Caribbean), and the science, technology and innovation programmes and initiatives of the Association of Southeast Asian Nations (ASEAN) related to food security, such as the ASEAN integration food security framework.

30. Examples of relevant international cooperation mechanisms included the Technology Facilitation Mechanism, the network of science and technology advisers to foreign ministries and the Global Open Data for Agriculture and Nutrition initiative. The exchange of knowledge and experiences and the sharing of good practices were vital to the dissemination of knowledge and technology and for capacity-building in developing countries.

31. Participants noted that the Commission on Science and Technology for Development had a critical role in promoting international cooperation in the areas of science, technology and innovation for development, including through the sharing of experiences and good practices. In that context, the Government of China offered to support a capacity-building programme, in collaboration with the United Nations Conference on Trade and Development (UNCTAD) and the Commission, focused on science, technology and innovation policy development, planning and implementation, and to sponsor the training of young scientists from developing countries in China.

Digital divides and poverty

32. Participants emphasized the need to address domestic and international digital divides and to improve country-level digital competencies and literacy in order to foster development and reduce poverty. Several participants identified different digital divides that policymakers needed to close in order to assist countries in achieving inclusive and sustainable development. Those included digital divides both across countries, with particularly severe divides experienced by the least developed countries, and within countries, including the gender digital divide. Although significant progress had been made in improving connectivity and access to the Internet over the past decade, the digital divides between developed and developing countries, rural and urban populations, old and young people, and men and women were still increasing. Such divides often impeded the ability of countries to harness the potential of science, technology and innovation for achieving the Sustainable Development Goals. To bridge the technical digital divides, panellists advocated: (a) greater emphasis on citizen empowerment in national and international development strategies; (b) improved digital literacy and competencies; (c) greater efforts to build capacity; (d) improved affordability, consumer protection and regulation; (e) accelerated infrastructure development; (f) the promotion of specialization in digital technologies and the building of the required skills base; and (g) the promotion of broad and active participation in international research and development networks and programmes. Several panellists provided examples of national initiatives to bridge digital divides by improving accessibility and strengthening digital competencies.

Digital services and e-commerce to reach all, including the poor

33. Participants agreed that information and communications technologies had become essential platforms for providing public and private services to millions of

people around the world, generating economic growth, promoting social integration, advancing environmental protection and better reaching those among the poor who had access. Participants also highlighted the need to prepare for the growth of e-commerce. Those technologies were making services such as market information, agricultural know-how, financial, educational and health-care services, which were previously harder to access, more easily accessible to people around the world. Indeed, it was difficult to envisage any aspect of human development today that could not be electronically-enabled. For instance, by using information and communications technologies, Algeria had managed to connect 646 health facilities and to improve health-care management and medical diagnoses. Lesotho envisioned transforming itself from a landlocked country to a land-linked country through the development of information and communications technologies. Participants noted the important role of the private sector in developing Internet-related infrastructure, delivering information and communications technology services and encouraging access through capacity-building and education initiatives.

34. Given that digitalization was a transformative force, there would also be challenges and risks that needed to be addressed. Participants therefore stressed that policies in key areas, including strategy development, information and communications technology connectivity, payment solutions, trade logistics, laws and regulations, skills development and financing, needed to be strengthened to fully take advantage of e-commerce. Some participants reported on recent efforts to encourage the development of e-commerce. The Government of India had embarked upon a large-scale national digital payment initiative to promote digital transactions across the country. To promote financial mechanisms through information and communications technologies, the country had developed a government e-marketplace to facilitate online procurement of commonly used goods and services and to enhance the transparency and efficiency of such procurement. At the international level, UNCTAD had created the "eTrade for All" initiative, launched in Nairobi in July 2016, to assist developing countries in seizing the opportunities offered by e-commerce and in addressing related challenges. More than 20 partner organizations had joined the initiative, and more than 30 private-sector entities had joined the Business for eTrade Development Council, which served as the initiative's private sector arm.

Commission on Science and Technology for Development

35. Participants reaffirmed the critical role of the Commission on Science and Technology for Development as the torch-bearer for science, technology and innovation for development. They encouraged the Commission to continue to articulate the critical role of science, technology and innovation as enablers of the Sustainable Development Goals and to inform and advise the Economic and Social Council, the General Assembly, the high-level political forum and other relevant forums. In addition, they encouraged the Commission to provide a forum for strategic planning and foresight regarding critical trends in science, technology and innovation in key sectors of the economy and to draw attention to emerging and disruptive technologies. They called upon the Commission to proactively strengthen and revitalize global science, technology and innovation partnerships for sustainable development. In particular, they encouraged the Commission to explore innovative models for financing science, technology and innovation for development, including impact investments and other sources of investment capital. Finally, they asked the Commission to explore ways and means of conducting international technology assessments and foresight exercises with respect to existing, new and emerging technologies and their implications for food security.